

|                              |                         |
|------------------------------|-------------------------|
| <b>Equipment Description</b> | PCB CS 8CH Analogue Out |
| <b>Ixys Part Number:</b>     | 119018                  |

|                      |                        |                        |                   |
|----------------------|------------------------|------------------------|-------------------|
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## 1. INTRODUCTION

### 1.1. GENERAL NOTES

This document outlines and defines the installation, operation and maintenance procedures for the Ixys PCB CS 8CH Analogue Out. The manual will contain all relevant data and methods to be able to use and maintain the device for its intended purpose.

It will be stated in the manual everything from technical specifications, installation and maintenance to troubleshooting.

### 1.2. PURPOSE AND SCOPE

The purpose of this manual is to give instructions to install, operate and maintain the PCB CS 8CH Analogue Out supplied by Ixys AS.

The manual is to be used by trained and competent personnel only.

### 1.3. ABBREVIATIONS

| Abbreviation | Description                        |
|--------------|------------------------------------|
| PCB          | Printed Circuit Boards             |
| TCP          | Transmission Control Protocol      |
| UDP          | User Datagram Protocol             |
| ESD          | Electrostatic Discharge            |
| IP           | Internet Protocol                  |
| EEPROM       | Electric Erasable Read Only Memory |

### 1.4. SUPPLIER CONTACT INFORMATION

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## 2. HEALTH, SAFETY AND ENVIRONMENT

### 2.1. GENERAL

Safety Notes and General Precautions shall be presented to all personnel concerned prior to testing, operation, maintenance and repair. The operations shall be performed by the responsible engineer/supervisor. The personnel using this equipment must have knowledge of this type of equipment and have familiarized themselves with the applicable procedures and manuals for this product.

### 2.2. SAFETY MESSAGE LEVELS

| Safety message level                                                                |                           | Indication                                                                                                                               |
|-------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|    | <b>DANGER:</b>            | A hazardous situation which, if not avoided, will result in death or serious injury                                                      |
|                                                                                     |                           |                                                                                                                                          |
|   | <b>WARNING:</b>           | A hazardous situation which, if not avoided, could result in death or serious injury                                                     |
|                                                                                     |                           |                                                                                                                                          |
|  | <b>CAUTION:</b>           | A hazardous situation which, if not avoided, could result in minor or moderate injury or damage to equipment                             |
|                                                                                     |                           |                                                                                                                                          |
|  | <b>Electrical Hazard:</b> | The possibility of electrical risks if instructions are not followed in a proper manner                                                  |
|                                                                                     |                           |                                                                                                                                          |
| <b>NOTICE:</b>                                                                      |                           | A potential situation which, if not avoided, could result in an undesirable result or state<br>A practice not related to personal injury |

### 3. SPECIFICATIONS

#### 3.1. DESCRIPTION

The 8CH Analogue Out PCB is a printed circuit board with multiple analog outputs.

#### 3.2. TECHNICAL DATA

| General      |                               |
|--------------|-------------------------------|
| Manufacturer | Ixys AS                       |
| Description  | PCB CS 8CH Analogue Out       |
| Weight       | ~90g                          |
| Dimensions   | 96 x 90 x 13mm (PC104 format) |

| Electrical Data   |             |
|-------------------|-------------|
| Supply Voltage    | 20 – 30 VDC |
| Power Consumption | ~5W         |

| Cable Connectors |              |
|------------------|--------------|
| Output Ports     | Wago 733-104 |

| Other                         |      |
|-------------------------------|------|
| Recommended spacers under PCB | 15mm |

### 3.3. WARRANTY CONDITIONS AND GUARANTEE

- Improper use of equipment where use is not reflected in what it was intended to.
- Where general maintenance is not performed leading to defective parts or other type of defect.
- Incorrect handling or use of equipment.
- Packing not carried out in an ESD protective way

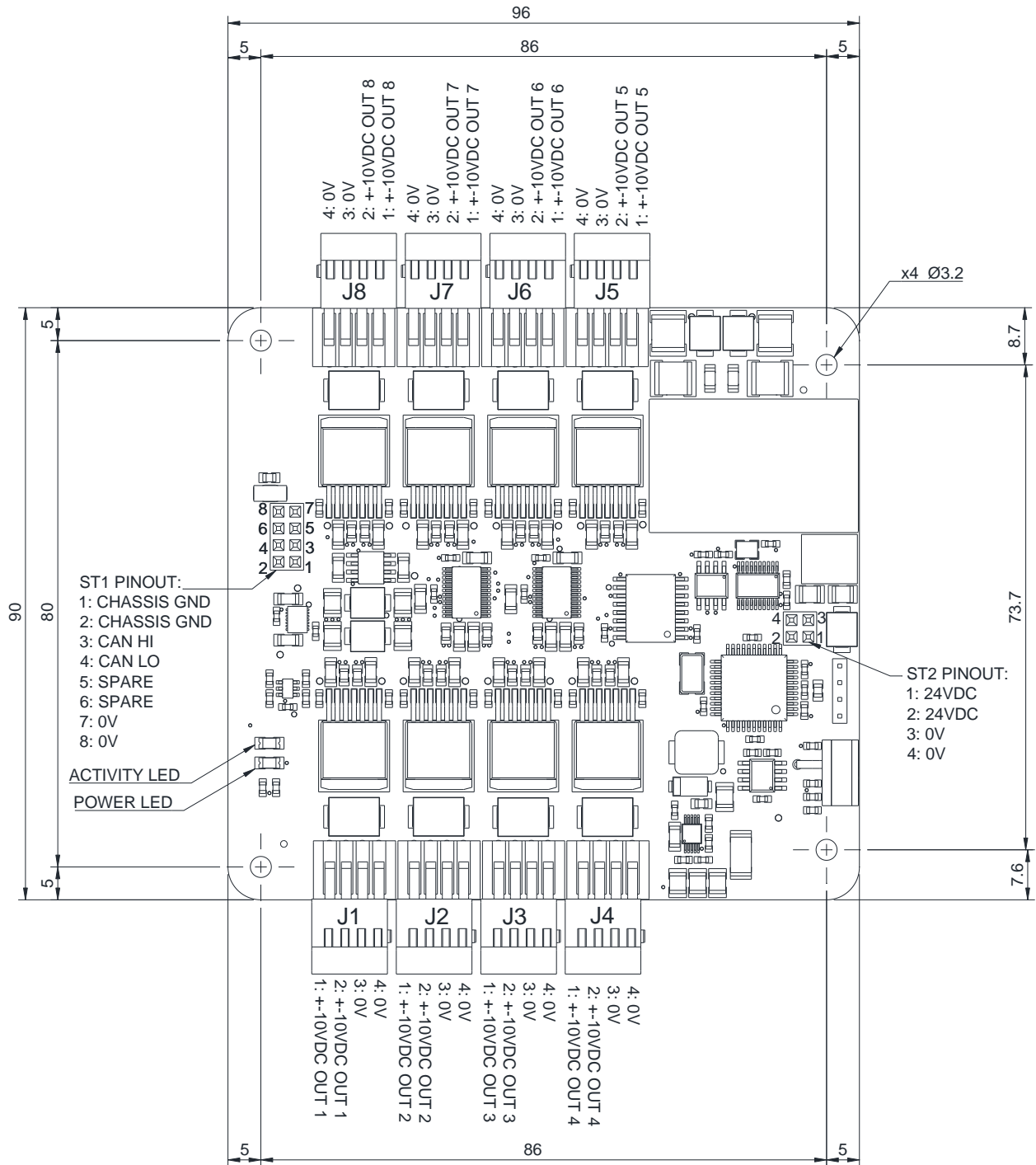
### 3.4. ORDERING

| Ixys Part Number | Description             |
|------------------|-------------------------|
| 101629           | PCB CS 8CH Analogue Out |

### 3.5. ACCESSORIES

| Ixys Part Number | Description                                  |
|------------------|----------------------------------------------|
| 100086           | Connector – 4 Way Cable contact Wago 733-104 |

4. DRAWING



## 5. OPERATION

### 5.1. NORMAL OPERATION

The board can be attached to another Ixys CS-range board configured as master. The board will then share power and communication with the master board and all outputs will be commanded from the master board Modbus registers. Node selector switch must be set to the desired node ID from 1 to 15(F). Node ID is normally set according to stack order.

### 5.2. SETUP

There is no configuration needed for this board.

### 5.3. TROUBLESHOOTING / FAULTFINDING

#### Preliminary fault isolation Check

- ✓ The electrical connections are correct as described in drawing in chapter 4.

| Trouble shooting                 |                                                                                                                    |                                                                                                                                                                                                    |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Symptom                          | Possible Causes                                                                                                    | Remedy                                                                                                                                                                                             |
| <b>No communication with PCB</b> | <ul style="list-style-type: none"> <li>• No power to board.</li> </ul>                                             | <ul style="list-style-type: none"> <li>• Be sure power in a range from 20 – 30 VDC is provided to the board.</li> </ul>                                                                            |
|                                  | <ul style="list-style-type: none"> <li>• Node ID not set above zero</li> </ul>                                     | <ul style="list-style-type: none"> <li>• Verify rotary switch set to correct Node ID</li> </ul>                                                                                                    |
|                                  | <ul style="list-style-type: none"> <li>• No termination on the CAN-Bus between the boards in the stack.</li> </ul> | <ul style="list-style-type: none"> <li>• Add 120-ohm resistor between CAN-High and CAN-Low by mounting a jumper on the dedicated termination jumper position on the stack master board.</li> </ul> |



## 6. REGISTERS

### 6.1. DATA TYPES

The following table describes the data types used on Ixys boards. For 32bit values two Modbus registers is used where the first is the most significant.

| Name   | Size   | Value Range                     |
|--------|--------|---------------------------------|
| INT16  | 2 byte | -32,768 to 32,767               |
| UINT16 | 2 byte | 0 to 65,535                     |
| INT32  | 4 byte | -2,147,483,648 to 2,147,483,647 |
| UINT32 | 4 byte | 0 to 4,294,967,295              |
| REAL32 | 4 byte | 1.2E-38 to 3.4E+38              |

### 6.2. OUTPUTS

| Address | Description | Note                                                    | Data Type |
|---------|-------------|---------------------------------------------------------|-----------|
| 0       | Output 1    | 0 to 32767 = 0 V to +10 V<br>-32768 to 0 = -10 V to 0 V | INT16     |
| 1       | Output 2    |                                                         | INT16     |
| 2       | Output 3    |                                                         | INT16     |
| 3       | Output 4    |                                                         | INT16     |
| 4       | Output 5    |                                                         | INT16     |
| 5       | Output 6    |                                                         | INT16     |
| 6       | Output 7    |                                                         | INT16     |
| 7       | Output 8    |                                                         | INT16     |